Division of Radiation Protection

Report on the DOH Response to the DOE-RL Alert for the Hanford Wildfire "24 Command", June 28 – June 30, 2000

January 2001

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INTRODUCTION

This report discusses the roles, responsibilities, and actions taken by the Washington State Department of Health (the Department) in response to the declaration of an Alert on June 28, 2000, by the U.S. Department of Energy – Richland Operations Office (DOE-RL) due to a range fire that threatened facilities in the 200 West Area on the Hanford reservation. Included are references to internet websites where the results of radiological analysis of air, soil, and vegetation samples taken by DOE-RL, the U.S. Environmental Protection Agency (EPA), and the Department can be found.

The issues and recommendations identified in this report are part of a long-standing commitment from both DOE-RL and the Department for adequate response capabilities both on and off the Hanford Site. The ultimate goal is that public health and safety be protected. This report recommends actions to be taken by both the Department and DOE-RL to ensure adequate protection is always available.

For more information on the Department's emergency preparedness for radiological emergencies and the response to this accident, please contact Susan May, Supervisor, Nuclear Safety Section, Division of Radiation Protection, Washington State Department of Health, P.O. Box 47827, Olympia, Washington 98504-7827, telephone (360) 236-3271 (email: susan.may@doh.wa.gov)

I. EXECUTIVE SUMMARY

On the afternoon of Tuesday, June 27, 2000 a fatality accident between a passenger car and a tanker truck near the intersection of state routes 240 and 24 sparked a brush fire. High temperatures coupled with extremely dry conditions allowed the fire to grow. Firefighters trying to contain the fire were outflanked when the wind shifted and the fire raced south and southeast through the Arid Lands Ecology Reserve on the west border of the Hanford Reservation and towards Department of Energy facilities in the 200 Area. At approximately 4:30 p.m. on Wednesday, June 28 the Department of Energy – Richland Operations Office (DOE-RL) declared an Alert emergency due to the range fire threatening structures, tank farms, trenches and cribs in the 200 West area.

Upon notification of the Alert from the Washington State Military Department - Emergency Management Division, the Department of Health - Division of Radiation Protection (the Division) initiated its notification process in accordance with the *Radiological Emergency Response Plan & Procedures Manual*. Division staff were contacted and instructed to report to the following operations centers: the State Emergency Operations Center (EOC) at Camp Murray, the DOE-RL EOC and Unified Dose Assessment Center (UDAC) in the federal building in Richland, the State Public Health Laboratory (PHL) in Shoreline, and the Franklin County Emergency Management Office in Pasco. Two DOH field monitoring teams were dispatched to take air and vegetation samples and other DOH staff, as they arrived, were assigned to accompany DOE-RL and US Environmental Protection Agency (EPA) field teams to supply directions, take split samples, and provide oversight.

While the fire did not damage any facilities that housed radioactive materials, it did burn vegetation that was growing in several areas where radioactive wastes had historically been buried or disposed. Some of the plants growing on the reservation have absorbed radioactive materials from the soil and this material might have been released in the fire. Fire-fighting activities also stir up potentially contaminated soil which could expose firefighters or be deposited off site. Using emergency response analysis criteria, no radioactivity was detected that exceeded emergency protective action guides.

DOE-RL terminated the Alert emergency at approximately 5 p.m. on Friday, June 30, 2000. The Department then shifted to an "environmental monitoring" mode of operations. The lab completed analyzing emergency samples and continued to analyze follow-up samples for several more weeks.

The Department is the state's lead response agency for emergencies involving the release, or potential release of radioactive materials. Primary tasks of the Department are to locate, identify, and assess the impact of any radiological exposure to the public. Based on the predicted or known impact, the Department recommends appropriate measures to protect the public from this exposure.

The authority for the Department's response to radiation emergencies is based on three specific mandates. The first is RCW 70.98, which established the Department as the state's radiation control agency. The second is Governor John Spellman's letter of August 28, 1983, which identifies the Department as the lead response agency to nuclear power plant accidents and directs the Department to "maintain a capability to assess any radiological hazards resulting from a Fixed Nuclear Facility emergency affecting the state of Washington." The third is RCW 43.06.010(12) and 43.01.200 – 43.06.270, which are the Governor's emergency powers. In addition, the *Public Health Improvement Plan (PHIP)* also identified two core capacity standards requiring response for radiological accidents: to protect citizens from radiation exposure (PHIP #57), and to assist the affected counties in their planning and response to environmental hazards (PHIP #71).

This report includes a description of the Department's response activities in each of the emergency activities, a summary of the Public Health Laboratory's analyses of the samples taken by Department field monitoring teams, and lessons learned from this response to help improve future responses.

II. DESCRIPTION OF RESPONSE ACTIVITIES

The Department of Health's Division of Radiation Protection (the Division) was guided by its *Radiological Emergency Response Plan and Procedure*s manual, in its response to the Hanford wildfire "24 Command". The initial contact for the Division was the Nuclear Safety Section (NSS) secretary in the Olympia office. The call came in over the Radiation Emergency line (206 – NUCLEAR) from the Washington State Military Department's Emergency Management Duty Officer (EMDO) in the State Emergency Operations Center at Camp Murray, WA. The secretary relayed the information to Dick Cowley and Bob Clark, Nuclear Safety Section staff, and to Terry Frazee, Radioactive Materials Section supervisor, all of whom were in the office at that time.

The NSS secretary notified Susan May, the NSS supervisor, via cell phone and she reported to the State EOC at Camp Murray. Cowley, Clark, and Frazee contacted DRP response personnel and DOH management. Management contacted were: Mary Selecky - DOH Secretary, Mike Odlaug - acting Division Director, Eric Slagle - Deputy Secretary in lieu of Don Oliver - acting Assistant Secretary EHP, Dennis Anderson - DOH Risk Management, and Rob Duff – toxicologist.

Below is a timeline of events that occurred after the "Alert" notification.

Response Timeline

June 28, 2000

1630	DOE-RL declared an Alert emergency due to a range fire entering the Hanford Site and threatening the 222-S laboratories. DOE-RL notified the State via a "crash call".
~ 1640	The EMDO notified DOH via the 206–NUCLEAR line.
1645-1900	NSS staff in the Olympia office notified Division response staff and DOH management regarding the event. The notification process was complicated by a number of coincidences. The event occurred at the end of the workday, nearly all of the Richland staff were in Western Washington attending training or staff meetings, and nearly all of the direct management chain positions were filled by staff 'acting' in their absence.
1710	Susan May reported to the State EOC to represent DOH.
1715	Randy Acselrod, the first Division staff in Richland to be contacted, was informed of the situation and instructed to report to the DOE-RL UDAC to fill the position of the DOH Initial Responder.
1725	Al Danielson of the Richland staff was contacted and informed of the situation. Danielson was to report to the UDAC and relieve Acselrod.
1730	DOH Public Information staff, Tim Church and Donn Moyer, arrived at the State EOC.
1755	Mark Henry, NSS staff, arrived at the EOC to assist Susan May.
1845	Al Danielson, along with Mike Brennan, arrived at the UDAC. Danielson relieved Acselrod as the DOH representative and Acselrod and Brennan proceeded to the Franklin County Emergency Management office to assemble field team supplies. Dennis Anderson, DOH Risk Management, arrived at the State EOC.
1930	Dick Cowley brought the 200 Area Hazard Assessment manual to the State EOC. Al Danielson (UDAC) contacted Mark Henry (EOC) to discuss the situation. The DOH field team (Acselrod/Brennan) was dispatched simultaneously with a DOE-RL field team.

2115 Siemens Power Corporation (Siemens) notified the Nuclear Regulatory Commission (NRC) that it was taking precautionary measures due to the fire. This was logged by the NRC as a declaration of an Alert.

2200 Terry Frazee relieved Susan May as the lead DOH representative in the EOC. Mark Henry assisted.

Debra McBaugh relieved Al Danielson as the DOH representative in the UDAC; Danielson stayed on to assist.

2230 Danielson (UDAC) informed Frazee (EOC) that Siemens and Allied Technology Group (Allied) in north Richland were in 'safe' mode and evacuated. The status of the Nuclear Laundry was unknown. (The fire had rapidly spread southward and approached these facilities.)

2330 McBaugh (UDAC) informed Frazee (EOC) that there were plenty of Battelle and DOE field teams available. It was not necessary to request federal radiological assistance since no facilities had been damaged.

2350 Air samples taken by DOH field teams at Siemens and air and smear samples taken at the federal building indicate only background radioactivity when measured with field instruments.

June 29, 2000

0038 McBaugh (UDAC) informed Frazee (EOC) that the power was out at the federal building and in Pasco. DOE-RL could not use its laboratory due to its proximity to the fire. A DOE-RL portable lab was being set up and should be ready by 0700. McBaugh suggested we (DOH) contact Severn Trent Laboratories (formerly Quanterra) for DOE-RL sample analysis. State samples would still go to the Public Health Laboratory in Shoreline via the Washington State Patrol (WSP).

0055 McBaugh (UDAC) informed Frazee (EOC) that the power was back on in the federal building. Three DOE-RL field teams were working Horn Rapids, Sagemore Road, and east of the Columbia River.

0150 Siemens notified the NRC that the fire had moved away from their site and that they were lifting the precautionary alert.

0245 McBaugh (UDAC) and Frazee (EOC) set up field teams for the daylight hours. Two DOH teams would take vegetation samples and collect air sampler filter media concentrating on off-site areas from Benton City east to the Columbia River. DOH staff will also accompany three DOE-RL field teams for oversight.

0300 Al Conklin arrived at UDAC.

0336 Frazee (EOC) made arrangements with the WSP representative in the EOC for sample transfer and transport.

0513 Conklin relieved McBaugh as DOH representative in UDAC.

0602 Frazee (EOC) was informed by the WSP representative in the EOC that WSP had only three troopers in the Hanford area. DOH should coordinate directly with the WSP representative in the Benton County EOC for transport of samples.

0650 Conklin (UDAC) informed Frazee (EOC) that DOE Headquarters had requested the Environmental Protection Agency (EPA) to send up their air-sampling plane. The consensus was that additional resources weren't needed as only contaminated soil and vegetation had been involved in the fire.

0756 Allied and Siemens are back in operation. The fire didn't cross Horn Rapids Road but was heading east towards the 300 Area.

0800 Susan May relieved Terry Frazee in the EOC. Dick Cowley assisted May.

0830 Conklin (UDAC) informed May (EOC) that there were changes to the sampling plan. DOH field teams discovered that they were unable to collect adequate air samples because the samplers (low-volume samplers) weren't able to pull enough air.

0845 Conklin (UDAC) informed May (EOC) that the EPA plane was on its way. It would survey two times looping the river and then do the Tri-Cities (Richland, Kennewick, and Pasco).

0900 George Hilton, Laboratory Director, informed laboratory staff that they would be receiving some samples from Hanford for expedited analysis.

0930 Conklin (UDAC) informed May (EOC) that EPA was <u>not</u> bringing the plane, only staff and instruments from Nevada. The report on the fire was that it should be contained sometime tomorrow. Coordination with WSP for sample transfer is challenging due to manpower shortage.

1000 Mike Odlaug (Acting Division Director for Radiation Protection) informed the EOC that, at our request, the EPA was sending 20 low-volume and 10 high-volume air samplers and 4 Pressurized Ion Chamber detectors. They should be in this afternoon or tomorrow. EPA will report to the Incident Command Center at the TRAC (Trade, Recreation and Agriculture Center) in Franklin County. The Division will direct their activities.

Cindy Grant, DOH Lab Liaison, arrived at Public Health Laboratory.

1005 UDAC informed the EOC that the first air sample readings appear to be the typical radon daughter products. Also, cell phones on site were not working well, the field teams have to resort to landlines (cell sites probably damaged by fire or overloaded).

1030 Debra McBaugh relieved Al Conklin in the UDAC. Dick Jaquish assisted.

1140 Susan May (EOC) provided information to the DOH Secretary's office regarding air monitoring. May informed Mary Selecky's assistant, Kathy Cleeves, that we hadn't seen anything out of the ordinary radiologically.

1200 May (EOC) provided information to the DOH Public Information Office for the Governor regarding DOH's response and environmental monitoring. The briefing included warnings regarding air quality and smoke.

1400 Public Health Laboratory staff was informed that 5 or 6 samples will be arriving in the next 1-2 hours and that results were needed as early in the evening as possible. Four gamma detectors are calibrated.

1430 Laboratory staff began to set up laboratory for emergency response sample receiving and login. (The lab had not been officially notified that an emergency had been declared but decided to use this as an opportunity to practice their emergency procedures.)

1535 WSP trooper arrived at the Public Health Lab with the first field samples. Receipt of 9 samples completed in 45 minutes. (Samples were not prescheduled in the database and no analytes had been defined.)

1605 Lab Liaison gave verbal sample priority instructions: air samples first.

1630 EPA arrived in the Tri-Cities and met with DOE-RL and DOH to discuss sampling plans and what DOH wanted them to do.

1730 Mark Henry and Bob Clark arrived at the EOC to assist.

1750 Grant (Lab Liaison) informed lab staff that more samples would be arriving later in the evening. No estimated time of arrival yet.

1830 All samples in lab have been analyzed. Grant (Lab Liaison) informed staff that up to 15 additional samples will arrive between 10 and 11 P.M. Lab secured processing for the evening. They will receive additional samples when they arrive and recommence processing at 0600 on 9/30.

2000 Leo Wainhouse relieved Susan May as the lead DOH representative in the EOC. Mark Henry and Bob Clark assisted.

2020 Wainhouse (EOC) received a call from a concerned citizen in eastern Washington regarding Plutonium, the Green Run, and other Hanford issues.

2030 The Governor's press secretary toured the EOC.

2100 Grant (Lab Liaison) faxed the first sample results to the UDAC and EOC.

2210 The second set of samples (15) arrived at the lab. Samples are placed in the preparation lab and the room locked for the night.

2230 Dick Jaquish relieved McBaugh as Health Rep in UDAC.

2400 Earl Fordham relieved Jaquish in UDAC.
Arden Scroggs relieved Wainhouse in EOC. Henry assisted.

June 30, 2000

0000-0800 Earl Fordham (UDAC) assisted in the dose assessment for a fire potentially involving a source stored in an out building. It turned out that the building was not damaged by the fire and there was no release of radioactive material from the building.

0615 Lab began login & sample processing of batch 2 beginning with air filters. These air filters were from DOE high volume air samplers and did not conform to the lab's standard counting geometries. These samples were analyzed with a warning. Began processing vegetation samples.

0645 Lab's gamma spectroscopy system exhibits problems.

0700 Lab resolved problem with gamma spectroscopy system.

0740	McBaugh relieved Fordham in UDAC.
0900	McBaugh participated in a televised press briefing with U.S. Department of Energy Secretary Richardson and DOE-RL Site Manager Keith Klein.
0915	Additional laboratory results faxed from lab to UDAC and EOC.
1320	Lab results faxed to UDAC and EOC. DOH terminated its presence in the EOC and shifted to an environmental monitoring mode. The fire was 90% contained; no DOE facilities were threatened. UDAC remained operational. McBaugh (UDAC) provided information on the DOH response and monitoring results to a Los Angeles newspaper.
1330	McBaugh (UDAC) interviewed by NBC Nightly News.
1400	Two more samples arrived at the lab unannounced. These samples were delivered to the mailroom instead of the radiation lab. No signatures were received on the chain-of-custody form and the trooper was not surveyed prior to leaving.
1430	McBaugh (UDAC) interviewed by Northwest Cable News
1500-1630	NBC news team accompanied WA State field team (Gail Laws and John Martell) to video them taking samples.
1657	DOE terminated the Alert. The DOH response shifted from an emergency response mode to an environmental monitoring mode under the oversight of the Environmental Radiation section.
1910	Brennan delivers four vegetation samples to the lab.
2015	Results of the last four samples given to the Lab Liaison.
2100	Laboratory emergency operations are terminated.

DOH staff continued to accompany DOE-RL and EPA field teams and collected split samples on Saturday, July 1.

Environmental staff continued to collect air and vegetation samples from the affected area and send them to the Public Health Lab in Shoreline for more detailed analysis.

The Public Health Lab reanalyzed the samples taken during the fire using longer count times to look for gamma emitting isotopes at lower concentration levels. Follow-up analyses were conducted for alpha and beta emitting nuclides.

III. CONCLUSIONS AND RECOMMENDATIONS

A. DEPARTMENT OF HEALTH ACTIONS

1. Classification and Notification

Issue #1: There were significant difficulties in notifying Department of Health management because all of the normal management who would be notified were out of town and had alternates acting for them.

The notification procedures for responding to a radiological emergency have the Emergency Response Duty Officer (ERDO) or the Emergency Response Group (ERG) contact the Director of the Division of Radiation Protection who in turn contacts the Assistant Secretary, Environmental Health Programs, State Health Officer, and the Secretary of the Department of Health. Division staff made the notifications in this instance because the "acting" Division Director had not yet been contacted. At the time of this event, many of these positions were filled by staff 'acting' on behalf of the normal management. Fortunately, the Nuclear Safety Section Supervisor was aware of who was acting for whom and most of those managers could be contacted by phone or pager. This information was not common knowledge among staff trying to contact management.

Recommendation: The Department of Health should review its process for notifying management in an emergency to make it so that there is one point of contact for notification of management who is always aware of who is in charge for essential Departmental management.

Issue #2: The Division failed to promptly notify the Director of the Radiation Laboratory at the Public Health Laboratories of the emergency classification. Therefore the Lab Director was unaware that the laboratory was needed to be set up in an emergency response mode.

The Division of Radiation Protection's Radiological Emergency Response Plan and Procedures manual does not specify how the Director of the Radiation Laboratory is notified. The Plan gives a general depiction of who is to be notified but the Procedures for the ERDO and Division Director do not specify

who notifies the lab. The Procedures also fail to provide instructions for informing the lab as to the emergency classification, whether samples are to be expected, urgency of analyzing samples, or what nuclides they would be asked to analyze for. Fortunately in this instance, the laboratory staff took the initiative to use this opportunity to practice their emergency response procedures. They are to be commended.

Recommendation: Revise the Radiological Emergency Response Plan and Procedures manual to specify who is responsible to notify the laboratory of an emergency declaration that will involve the laboratory and to provide guidance on what information needs to be provided to the lab.

2. Staffing of Response Positions

Issue #3: DOH had difficulty in fully staffing response positions for two reasons. First, not all of the Department of Health's emergency responders were specifically trained to respond to a Hanford incident. Second, most of the Richland based staff, who would make up the bulk of the responders for UDAC and field teams, were in Western Washington for required Inspector/Investigator training or staff meetings.

The Division's resources do not allow for training all of the Department's emergency responders for Hanford-specific response roles. Thus the Department has only enough Hanford-specific trained staff to fill all Hanford response positions for one shift. In the past we have been able to get by with that number because the previous two Hanford classified emergencies have not lasted for more than eight hours. However, this event lasted as a classified emergency for approximately 48 hours (1630 June 28 until 1700 June 30) with continued field and laboratory activities for several days. This coupled with the unavailability of several staff members due to training made it impossible to properly staff all response positions for continuous operation. Staff who were in a leave status were not recalled to respond to the event.

Staff who were able to respond had to fill multiple positions and work as much as 16 to 18 hours in a row. UDAC seldom had more than one Health representative to fill three positions. DOH had no field team coordinator to communicate with its field teams. The UDAC representative had to fill the roles of State Health Liaison and Joint Information Center Technical Spokesperson as well as their normal duties. Press conferences took the lone Department representative in the UDAC out of the UDAC and out of contact

with everything that was going on. Due to the location of the response areas at the DOE-RL EOC, it is essential that the Department staff the three main response positions at the UDAC: UDAC Representative, JIC Technical Spokesperson, and Field Team Coordinator.

In the State EOC, the senior Health representative in the EOC was taking on the responsibilities of the Radiation Health Physicist (RHP) and Division Director. A representative for the State Health Officer was available if needed. Fortunately, for most of the day, at least one additional staff member was available to assist the RHP.

Field monitoring teams frequently worked from 7 or 8 am until 2 am the next morning and then start over again at 7 or 8. Many of the responders were reporting to work after having worked a full day in Western Washington and then driving back across the mountains to Hanford.

Recommendation: The Division needs to identify additional resources in order to train more staff for a Hanford-specific response. There needs to be sufficient staff to fill all identified positions for two 12-hour shifts. Priorities need to be set on which positions get filled first.

Issue #4: Involvement of Public Information Resources in the Response

Public Information resources were involved in the response early on. In fact, members of the Department's Media Relations Office were in the State EOC within 1 hour of the Department's notification. Their early involvement greatly assisted in dealing with the media and Department management. Their dealing with these issues made the job of the senior DRP representative much easier.

Later in the event, similar PIO involvement at the DOE-RL JIC would have been an even greater help for Health's UDAC representative. Taking them out of the UDAC to brief the media took them away from their primary responsibilities of managing the Department's response. Department staff who did participate in the press conferences should be commended for their professionalism in addressing the media's questions and maintaining credibility both for themselves and for the Department.

Recommendation: The Department needs to ensure that staff is available for public information duties. This can be either a qualified Technical Spokesperson from the Radiation Protection staff (preferred) or someone from the Media Relations Office.

3. Role of DOH Field Responders on the Hanford Site

Issue #5: The Department's field monitoring teams were assigned to take samples at various places on the Hanford site instead of its usual role of performing its activities off-site.

It has been the Department's policy that its field monitoring teams activities were to be conducted in areas outside of the Hanford site. Monitoring on the Hanford site has always been the responsibility of DOE or contractor staff. In this event, both State and Federal field teams were assigned to areas on the site and, in many cases, State staff accompanied Federal field teams. This brings into question, "what is the role of the Department's field teams on the Hanford site?"

Recommendation: The Department needs to review its policy of responding only offsite to determine if it should be revised to consider onsite response also.

4. Management Information and Decision Making During an Emergency

Issue #6: During the course of this event, certain decisions affecting the response were made by management without input or concurrence of Department staff directly involved with the response.

One of the options available to the Department in a radiological emergency is to request federal assistance if the Department feels that the response effort will exceed the capabilities of the Department and the facility. Early on in the response, senior Health representatives in the State EOC and UDAC conferred and agreed that, since no radiological facilities were directly involved, federal assistance was not necessary. Later in the event, the White House and Energy Secretary Bill Richardson requested that the EPA activate a FRMAC response to assist in the radiological assessment. An EPA representative independently urged the Department to request federal assistance so that the Department would have more control over the EPA response. This request was rejected twice by EOC and UDAC representatives as not being necessary and because of the possibility of assuming financial responsibility if the assistance request was made.

The urging was made again, this time to Department management not involved in the response. The offer was accepted. Management felt that the Department should not reject the offer of assistance, especially since they were assured that there would be no cost involved. Management had no discussion with senior

Department representatives in the EOC or UDAC before making this decision. The EOC and UDAC were not informed that the assistance was offered at the request of the President.

Recommendation: **Any decisions regarding the Department's response to an emergency, radiological or otherwise, should be made or coordinated with the senior Department staff who are directly involved in the response.**

Training should be developed in the following three areas:

1) **The financial consequences of requests for federal assistance**

2) **Recognition of the possibility of outside influence such as the President.**

3) **If we request assistance, we must clearly define what detection levels we want. We should develop Data Quality Objectives now in preparation for a future request.**

Issue #7: **Contact by the Governor's Office with agencies in the State EOC and with the Emergency Management executive management yielded inconsistent information to the Governor's Office and frustration in the EOC.**

During the event, the Governor's Office contacted Health in the State EOC for information regarding health effects from the smoke and any radioactivity released from the fire. The Governor's Office then contacted Emergency Management Division's executive management, who was not directly involved in the radiological response, and could not confirm any information regarding that response.

Recommendation: **DOH, EMD, and the Governor's Office should continue to train collectively on existing EOC procedures in order to better communicate issues and critical information to each other, the media, and the public. All agencies represented in the EOC should make EOC management aware of any communication with the Governor's office.**

5. Hazard Assessment Resources in the State EOC

Issue #8: Health staff in the State EOC initially could not evaluate potential hazards in the facilities threatened by the fire.

When Health staff arrived at the State EOC, there were no up-to-date resources for evaluating the potential consequences if one of the DOE facilities were to become involved in the fire. It wasn't until at least two hours later when Health staff from Tumwater brought a copy of the 200 Area Hazard Assessment manual to the EOC that they were fully aware of the seriousness of the hazard. DOE unofficially told Health that the Hanford Emergency Assessment Resource Manual (HEARM) is no longer being used and that the various area Hazard Assessment manuals have replaced the HEARM. However, DOE had not provided the State with a copy of these manuals for use in the State EOC.

Recommendation: DOE has provided a copy of the area Hazard Assessment manuals to Emergency Management for placement in the State EOC.

6. Paying for the Cost of Responding

Issue #9: The Department has no way to pay for the cost of its response.

The Department's USDOE emergency preparedness grant does not cover "emergency response", it covers only "planning". The cost of the Department's response for this accident has not yet been determined but will certainly run into tens of thousands of dollars. The planning grant is the only source of funding currently available from the USDOE thus response charges will result in an over-expenditure at the end of the Department's USDOE grant funding cycle in December. This issue was also identified in the PFP accident report.

Recommendation: Department of Health management needs to address the proper way to pay for this expense, with support from DOE-RL.

7. Laboratory Issues

Issue #10: The state laboratory has no resources for planning for Hanford-specific accidents.

The state laboratory is prepared to handle radiation emergencies in general and specifically Columbia Generating Station accidents involving fission products. However, there are no specific procedures or resources to address Hanford-specific events; e.g. plutonium measurement. There are also no Hanford-specific analyte libraries identified for the laboratory to use in a Hanford accident.

During the response, the Department split samples with the federal field teams. The lab could not always accommodate the differences between State and Federal equipment, such as the use of high-volume air samplers by the Federal agencies which were not of the same geometry, volume, or media as State air samples.

Recommendation: **The Department's Division of Radiation Protection, in cooperation with the laboratory, must address ways to work with USDOE to support the laboratory in developing and training in Hanford-specific emergency procedures or other situations where federal field assets are utilized. This should include incidents involving nuclear weapons accidents and weapons of mass destruction.**

8. Adequacy of Field Team Air Sampling Equipment

Issue #11: **Due to the large sample volume needed to detect short duration releases of plutonium in air between environmental levels and protective action guides, the Department's emergency air sampling procedures and equipment need to be revised.**

During this event, air samples were taken using air filters which are part of the Hanford and Energy Northwest environmental monitoring network along with grab samples taken using portable, low-volume air samplers. The environmental monitoring samplers are used to determine trends in ambient conditions and can detect spikes in fission products. However, they cannot detect small changes due to a relatively short duration low-level release of plutonium. Current procedures for taking air samples are based on response to a reactor accident where the majority of isotopes have significant gamma emissions which are readily detectable. Plutonium is an alpha emitter with a very long half-life thus, in order to detect it, the air sample must take in a much larger volume of air. The use of high-volume air samplers will allow DOH to see lower levels of plutonium during an emergency event.

Recommendation: **The Department must review its air sampling needs for emergencies involving plutonium and revise its procedures. One already recognized need is to acquire high-volume air samplers.**

Issue #12: **The Department assumed its field instruments could see protective action levels although they cannot see levels close to background for plutonium.**

The Department did quick calculations assuring itself that it indeed could see contamination at levels below the protective action guides. Its latest laboratory results confirmed this assessment. It would be helpful to EOC, UDAC, and JIC staff to have a rigorous assessment and a written description of what levels the Department's field instruments and quick laboratory analysis can see for all pertinent Hanford radionuclides and what instrument or laboratory procedure is used to detect this level. With this information the Department would be better able to quickly make the correct protective action recommendations to protect the public's health and safety.

Recommendation: **Assess what radioactivity levels can be seen with field instrumentation and quick laboratory counts. Establish a committee of DOH and DOE-RL staff familiar with this issue to evaluate the situation and develop a document that identifies what level our instruments can detect, the instrument / method needed to detect this level, and the protective action guide limits for each isotope in question.**

9. Detecting Radioisotopes in Samples

Issue #13: **Due to the difference in the data quality objective for environmental soil sampling and emergency soil sampling, the Department's emergency soil sampling procedures and equipment need to be revised.**

The Department's standard soil sampling protocol, to take a sample of soil in a square pattern one-foot on a side and one inch in depth is what was used in this response. This type of protocol is appropriate if you are looking for how much contamination is in the top layer of soil. It does not, however, differentiate between contamination in the soil from previous conditions and contamination freshly deposited on the soil. In the early part of an emergency the primary concern is contamination deposited on the soil from the accident. The total

contamination in the soil is significant later when uptake by vegetation or resuspension are concerns.

Soil sampling procedures need to be revised so that they accurately address the concerns of the situation. If deposition is the concern then perhaps the sampling should be conducted on hard surfaces where only the surface dirt or dust can be collected. If looser soils are the only appropriate locations then a different means of securing a sample needs to be developed. If the concern is total concentration in the soil then the current protocols are sufficient.

This difference in protocols is particularly important when looking for alpha deposition. The additional several millimeters of soil taken in the current protocol dilute the surface contamination sample and shield the alphas from being detected. It is not nearly as critical for gamma deposition since they will not be shielded.

Recommendation: The Department must review its soil sampling procedures, especially for Hanford accidents, and revise as appropriate.

B. DOE ACTIONS

1. Hazard Communication

Issue #14: DOE did not accurately convey the risk to certain facilities from the fire to the State EOC.

Staff in the State EOC were not accurately informed on how close the fire came to the at-risk facilities. Staff was led to believe that the fire never came closer than a few hundred yards from the facilities and did not come close enough to place them in peril. It was later learned that the fire came very close to the Central Waste Complex, a facility with a large quantity of barrels of low flash-point mixed waste containing Plutonium.

Recommendation: DOE must ensure that it provides the State with accurate, up-to-date information on the status of the emergency in order for the State to adequately protect the public.

C. CONCLUSION

The Department's primary mission in responding to the Hanford fire was to protect the health and safety of the public and firefighters. Health accomplished that purpose by monitoring and sampling air, soil, and vegetation downwind of the fire in order to evaluate the risk to the public and firefighters from the potential exposure to radioactive materials released from the fire and to determine the need for any protective actions for the public. The Department faced many challenges in this effort, yet was able to overcome them. The public was assured that their health and safety were not at risk from any radioactive materials released from the fire.

Fortunately, this accident did not directly involve any DOE-RL facility housing radioactive or other hazardous materials. The most serious radiological hazards came from the burning of contaminated vegetation and the potential for subsequent resuspension of contamination from soils uncovered by the fire or disturbed by firefighting activities.

A question we must ask ourselves, the stakeholders, environmental groups, and the public is, "at what point do we stop measuring for plutonium?" Levels which would cause a public health concern were never remotely reached during the Hanford fire. However, we have been and continue to look for radioactivity far below any health concerns but above background readings. Could time and money used to provide this service be better spent elsewhere?

Having the ability to measure radioactivity independently from and in conjunction with (split samples) the Department of Energy initially resulted in validation of the data findings. Secondly, this led to a greater trust by the public and the environmental oversight groups that the response was being handled effectively. The State provided a level of credibility to Energy by having independent measurement and assessment capabilities which should continue to be maintained in the future.

IV. SUPPORTING DATA

Laboratory results of the air, soil, and vegetation samples taken during the fire may be found at the following websites:

USDOE-RL sample analysis – **www.hanford.gov/envmon/monitoring.html**

EPA sample analysis – **www.epa.gov/radiation/rert/index.html**

WA DOH sample analysis – **www.doh.wa.gov/ehp/rp/hanfordfire.htm**